engaged in blasting rocks on one mile of these large works. —— The Hawick and Edinburgh is also fast progressing in the vicinity of Galashiels, where the station is nearly finished, and the bridge across the Tweed begun; the foundation-stone of the latter having been laid upon the solid rock, on Wednesday week, in presence of the contractor, Mr. Dodds, and others. —The works and plans of the Great North of Scotland are nearly ready, and operations are to be commenced in October.

BUILDERS' TENDERS.

HILLINGDON CHURCH.

The following tenders for the alteration and reparation of Hillingdon Church, Middlesex, were opened on the 29th ultimo, and the lowest was accepted.

Morten, Uxbridge	£3,579 0
Oades and Son, Egham ...	3,218 12
Blowman and Co., Oxford ..	2,991 0
Fassnidge, Uxbridge	2,392 0

A correspondent complains, that the accepted competitor having discovered "an error in his estimate amounting to 385*l.*, the committee agreed to accept his amended tender for 2,700*l.*, being an addition to the former tender of 308*l.*" And he asks for our view of the fairness of a contractor being allowed to amend his tender after the tenders from other parties have been made public.

However desirable it may be that a builder should not suffer through an accidental error, permission to make such an alteration is certainly objectionable on principle. The next step would be, when one who was not the lowest shewed that *he* had accidentally put down too *much*, and was in truth less than the lowest, to give him the work. Still we see no reason to find faults with the committee in this case; especially as they comprised the largest subscribers, and were doubtless fully satisfied as to the truth of the contractor's statement.

With reference to the great difference found in builders' estimates, concerning which we continue to receive a large number of letters, one correspondent suggests, that if the *middle* tender were always accepted, it would induce greater care in the preparation of estimates. Bad or good, the suggestion is not likely to be adopted.

INSTITUTION OF CIVIL ENGINEERS.

June 8. Sir John Rennie, president, in the chair. The paper read was "On the expansive action of steam," by Mr. J. M. Heppel. The object of the paper was to deduce a more exact formula than those now in use, for the dynamical effect developed by steam in expanding from one pressure to another. The usual method of computing this effect neglects the influence of the variation of temperature, which always accompanies change of density, and which has been shewn to modify considerably the corresponding pressure. M. de Pambour, however, has, by combining Gay Lussac's formula for the relation between temperature and density, under uniform pressure, with that of Boyle, for the relation between density and pressure under uniform temperature, deduced a formula containing the density, pressure, and temperature, from which any two being given the third may be deduced.

What was further done in Mr. Heppel's paper was to combine this formula with one by Mr. Scott Russell, expressing the relation between the pressure and temperature, and by this means to eliminate the latter, and obtain a formula containing only the pressure and density.

From this formula another was easily obtained, shewing the total dynamical action developed during expansion from one pressure to another, and the results were given in a tabular form, exhibiting 1. The pressure in lbs. per square inch. 2. The relative volume, or ratio of the volume of steam, to that of the water which produced it. 3. The dynamical effect before expansion, or the number of lbs. raised one inch by the evaporation of each cubic inch of water. 4. The dynamical effect during expansion, or the number of lbs. raised one inch by the steam produced from one cubic inch of water, in expanding from a pressure of 100 lbs. per square inch to the particular corresponding pressure. The dynamical effect, in expanding from any one pressure to any other, must be clearly expressed by the difference of the corresponding numbers in this column.

It was followed by a short paper also, "On the expansive action of steam," by Mr. Tate, mathematical master of the Training College, Battersea. Its object was to demonstrate and apply a formula some time since discovered by the author, expressing the law of the expansion of steam; and at the same time to establish certain general equations relative to the work of steam, applicable to all formulæ professing to give the law of volumes and pressure. It also examined and corrected Pole's formula, which, although a decided improvement upon Pambour's, was stated to be not sufficiently accurate for pressures above 70 lbs. or below 16 lbs.

Monsieur Piarget exhibited in the library, after the meeting, specimens of his improvements in producing ornamental metal surfaces, formed by the deposition of metals during the electrotype process, which is conducted in a peculiar manner, with mixtures adapted to the effect desired to be attained. The form also of the bath is peculiar, and when the plate is taken out of it and off the model, it exhibits a burnished polish, or a dead appearance, according to the preparation used. The metal thus produced is stated to be of a much better description than metals which have not undergone such process, as it is more flexible, and is capable of withstanding the action of heat without destroying the form of the copper; and the surface will not tarnish when exposed to the air. Portions of any pattern can also be silvered by a similar process, and the general expense is about one-third of that of engraving or chasing, while the boldest or most minute patterns can be equally well produced.

WESTMINSTER COURT OF SEWERS.

A GENERAL court was held on the 4th inst.; Captain Bague, R.N., in the chair.

The report of the committee on view of the King's Scholar's Pond Sewer was received. It pointed out the defective state of that portion of it passing through the Green-park; and that in one or two instances surreptitious drainage into it had taken place from some houses in Pimlico. The new works adjacent to Buckingham Palace had been done to their entire satisfaction.

The report having been received, the parties illegally draining were ordered to be summoned to appear before the next court.

The New Bill for the Enlargement of the Powers of the Commission.—The solicitor laid before the court certain clauses proposed by the corporation of the city of London, to be inserted in the bill for extending the powers of this court, having for their object to prevent this commission from carrying on any improvements in the river Thames, without having previously obtained the consent of the corporation.

Mr. Willoughby looked upon the right of this commission of free access to the river Thames as a most important question. He denied strongly that the corporation were even lords of the manor, or were the possessors of the freehold of the river, but were simply its conservators. He claimed free access to it, aye or no, without making a bow or paying a toll to any one whatever. This court possessed an indefeasible right to the use of the river, and it was not for them to place themselves at the mercy of these parties, or that they should be permitted to put their construction on the possession of their rights come from what quarter it might. It was unjust on the part of the corporation of London, having themselves got free from all control, to damage the neighbouring districts; and he, for one, was not disposed to submit to either their smiles or their frowns.

This subject was terminated by the solicitor being requested to return such a clause as would fully maintain the privileges of this commission.

The next application was from the London Gas Light Company, for the insertion of two clauses, declaring that it should not be lawful for this commission to break up the ground without giving forty-eight hours' notice. That the works should be done under the superintendence of an officer of that company, and that the works of that company should be fully protected, under heavy penalties from the commissioners.

The court agreed to the two first provisions, but rejected altogether the question of penalties.

Sir J. Hansler said that the city commissioners, in making a sewer in great Carter-lane, had compelled him to be at great expense in protecting his houses, although he received no benefit whatever from the sewer, nor any of his tenants, who were perfectly satisfied with their present mode of drainage.

The Proposed Sewer in the Fulham-road.—The next question was "to consider as to the course to be pursued in consequence of James Hobbs not proceeding with the works in the Fulham-road, and to take such steps as shall be necessary." Mr. Hobbs, the contractor, was not in attendance, or any person on his behalf. It was resolved "That the next lowest tender be accepted." The next lowest tender was that of Messrs. Humphreys and Thirst, viz., 68*l.*; Hobbs being 61*l.* 10*s.*

Mr. Wm. L. Donaldson then moved.—"That, in cases of emergency, any six commissioners residing within one mile of the place where the case occurs, do take such steps as may be necessary; and that the clerk do summon at least ten such commissioners."

Several commissioners took part in this question, but the majority appeared to be of opinion that crude notions might be formed of cases of emergency, and that works might be done for which there was no real necessity.

The motion was eventually withdrawn.

Receipts and expenditure of the commissioners for the year 1846:—

Receipts.

Eastern division	£9,182	11	10
Western division	188	4	0
Ranelagh district	365	14	0
Counters Creek district ..	694	19	6
General disbursements ..	139	19	3
Balance in hand	15,588	6	10
	£26,759	15	5

Expenditure.

Eastern division	£2,490	4	11
Western division.....	2,943	5	5
Ranelagh district	1,293	10	10
Counters Creek district ..	1,303	11	8
Bayswater sewer.....	245	0	0
General disbursements ..	1,767	14	8
	£16,433	7	4
Balance in hands of treasurer	10,301	0	0
	£26,734	7	4
Ditto in hands of clerk on account of petty cash....	25	8	1
	£26,759	15	5

[We asked some time ago in what way the enormous balance in hand is employed; but have not yet been answered.]

THE TORRENT WATER-CLOSET.—We have already alluded to this very simple and apparently efficient self-acting closet; and now that it is duly manufactured for sale by Messrs. Dowson, feel it incumbent on us to direct attention to their advertisement of it on another page, wherein it is fully described and illustrated. The shape of the trap is ingenious; that portion of it which is in sight (at the bottom of the pan) has a smaller sectional area than the continuation of it, so that whatever will pass there is certain of getting away freely. Relative to traps, by the way, we have heard of a new drain-flap, recently invented. The flap consists of a series of plates, covered with vulcanized indian-rubber; the indian-rubber forming as many hinges between the plates. When there is no water in the drain, the flap shuts closely against a broad rebate, also covered with indian-rubber. If a small quantity of water is running down the drain, it opens only the lower part of the flap; if more water, two plates may be opened; a still greater quantity, three plates may be opened, and so on until the drain is quite full, when the whole would be opened.